DOCUMENT RESUME

ED 208 968 PS 012 478

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TITLE Teacher Questions to Male and Female Toddlers.
PUB DATE Aug 81
NOTE 16p.; Paper presented at the Symposium of the International Society for the Study of Behavioral Development (6th, Toronto, Ontario, Canada, August 17-21, 1981).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Child Caregivers; Classroom Communication; Convergent Thinking; *Day Care; Divergent Thinking; Early Childhood Education; Females; Interaction; Low Income; Males; *Questioning Techniques; Sex Differences; *Socialization; *Student Teacher Relationship; *Verbal Communication
IDENTIFIERS Process Analysis; *Toddlers

ABSTRACT

This study was designed to investigate three main topics: the frequency of different kinds of questions which day care teachers asked of low-income 2-year-olds, the toddlers' rate of response to questions, and differences in questions asked of boys and girls. It was hypothesized that caregivers would ask girls more personal-social questions and boys more referential-objective questions. This hypothesis was based on the notion that girls are socialized to be nurturing and expressive, whereas boys are socialized to be instrumental. Subjects in this study were 24 male and female toddlers whose day care fees were paid by Title XX funds. Observation of adult-child interaction employed A Procedure for Patterning the Responses of Adults and Children (APPROACH) for recording behaviors. The hypothesis was confirmed that girls would be asked significantly more convergent questions related to feelings and personal-social content than were boys. The hypothesis that boys would be asked more questions relating to referential-objective content was not confirmed but tended toward significance. The higher rate of male toddler responses to open-ended questions suggested that girls may be socialized to respond to safe, routine questions rather than to questions requiring cognitive restructuring of the objective world. (Author/DB)

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Teacher Questions to Male and Female Toddlers

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ED208968

The relationship of adults as teachers with toddlers is crucial to the cognitive development of the child emerging into language and preoperational thinking. Although peers provide some verbal interchanges with toddlers, adults still account for most of the learning interchanges toddlers encounter in group care (Honig, Caldwell, & Tannenbaum, 1970). Questions, however, may further toddler learning, be too difficult for toddlers to respond to, or may even represent social interchanges with little impact in stimulating cognitive, social and emotional development in the very young child.

Redfield & Rousseau (1981) reviewed experimental research findings on the relationship between level of teacher questioning and student achievement. Gains in achievement were more likely when classroom teachers used higher cognitive questions. Such questions require pupils to manipulate information in order to create and support a response, in contrast to questions that call for verbatim recall or recognition of factual information. French & MacLure (1981) analyzed teachers' questions and pupils' answers in a class of five-year old children. They found that teachers' questions in the classroom often differ from "genuine" questions outside the classroom, in that "... the teacher is not seeking information to solve some problem she has, but already 'knows the answer', and moreover has often pre-determined exactly what will count as 'the right answer'" (p. 34). The authors also discuss the various techniques that teachers use in reformulating their questions, so that the child will produce an acceptable answer.

PS012478

Paper presented at the Sixth Symposium of the International Society for the Study of Behavioral Development, Toronto, August 1981

There is a need for more knowledge concerning the nature of teachers' questions to toddlers. "Quality" questions that will promote cognitive and social development are particularly important for teachers who work with preschoolers from low-income, low-education families. Such children often score below their middle-class peers on language and cognitive measures. For example, in the standardization of the Caldwell Preschool Inventory, lower SES children were able to answer as many questions at six years of age as were four-year old children from middle SES families (Caldwell & Soule, 1970).

Forms of Questions

A variety of types of questions are used by caregivers. Some questions require only a "yes" or "no" answer. Others require a specific denotative response. "Is this a pencil?" and "What is this?" are respective examples of these two types of convergent questions. This type of question is important because it helps children focus on particular aspects of the personal and social environment. It also helps children learn new vocabulary words, classification categories, and words for differentiating similar experiences such as colors or shapes that are closely related.

If well formulated, convergent questions allow the child to retrieve present knowledge from memory. However, convergent questions that demand one correct answer or a yes/no answer should be theoretically less facilitative of higher-level cognitive development. They may not require the child to use representational abilities extensively. Yet, they may still be a useful means to initiate a child into the representative roles of question asker and responder.

Open-ended questions "provide direct confrontation to the child's current points of view, thus, leading the child to restructure his thoughts" (Sigel & Saunders, 1979, p. 169). When a teacher inquires of a child, "What would you like to do next?", neither the kind nor the amount of information required is specified. Nor is there clear evidence as to what a "correct" response is. Open-ended questions force the respondent to decide what is appropriate and how much to say.

With a teacher's questions such as, "What do we need to do to keep our gerbils happy and safe and comfortable?" cognitive tension is created. The child must select, from an array of options, the responses that he or she thinks best meet the demands of the question.

Consider the following open-ended questions:

1. "What do we need to make a cake?"
2. "How else could you get to the other side of the room?"
3. "Where are you going?"

Sigel (1970) suggests that in order to answer such questions a child must "create temporal and/or spatial and/or psychological distance between self and object." Distancing is proposed as the concept to denote behaviors or events that separate the child cognitively from the immediate behavioral environment (Sigel, 1970, p. 111-112).

When a teacher asks, "What would you like to sing next?" or "What else does Old McDonald have on the farm?" the child becomes actively engaged in trying to understand and to respond appropriately. Cognitive tension between current understanding and the need to adjust mentally to a somewhat unfamiliar idea or request sets in motion the Piagetian equilibration process. Through the equilibration process, children struggle to understand, to resolve confusions and discrepancies, to make sense of the question and to produce an appropriate response.

Other divergent questions such as choice questions allow a child to choose among alternative actions or responses helpfully provided by the adult. "Do you want juice or milk?" permits the child to consider the liquid alternatives. Choice questions are a form of open-ended questions that provide a felicitious opportunity for toddlers to assert autonomous wishes while being forced to consider alternatives in a cognitive context.

Content of Questions

The content of both convergent and divergent questions can differ. The topic

of caregivers' questions may involve the child's personal and social awareness. Such questions may be concerned with the child's personal subjective feelings, desires, wishes, intentions, and judgement of ability. Additionally, questions may focus the child's perceptions on the desires and feelings and intentions of other children. Research directed to such focusing of young children's attention has resulted in increased problem-solving ability of the children in social-personal conflict situations (Shure & Spivack, 1978). Such question-asking, therefore, can be considered a desirable component of a pro-social curriculum for pre-schoolers.

The content of some questions is referential, concerned with the physical and logico-mathematical nature of objects. Such questions engage children in thinking about size, shape, color, location, function and other attributes of objects as well as relationships between objects and symbols.

Some interrogative forms are not "true" questions designed to elicit information. Sometimes adults simply use interrogative structure to make a request of the child. When the caregiver asks the 2-year old, "Why don't you finish your peas before they get cold?" the caregiver is not expecting an answer to a question but rather is suggesting that the toddler eat his or her peas while they are hot. "Will you pick up the blocks?" is often the milder form of "Pick up the blocks" and functions as a request for the child to pick up the blocks. It is often difficult to distinguish whether the caregiver is indeed giving the child an opportunity to decide or whether the teacher has decided and is telling the child what to do. "Do you have to go potty?" was coded as a question and "Can you go potty?" was coded as a request. Other questions represent adult statements of emotional feelings couched in interrogative form, "Can't you ever learn to clean up your mess?" represents a rhetorical accusation rather than a desire to discover the rational views of the recipient with respect to the question. "Are you my jelly-bean?" does not require an answer either but functions as a

positive emotional comment in question form.

Research Goals, Hypothesis, and Questions

Question-asking is a positive tool for furthering the cognitive and social development of young children. For many children from low-income and low-education families, day care may be the primary educational setting in which such cognitive and social development is fostered in the early years.

The present research investigated ecologically 1) the frequency of different kinds of questions that adults ask of low-income two-year olds and 2) the toddler rate of response.

The third goal of the research was to discover whether teachers address different kinds of questions to boys compared to girls. Sex differences in addressing children may begin early. Cherry (1975) has reported that teachers acknowledge girls' answers to questions more frequently than boys' answers.

Parson's theory of personality development states that males are socialized for instrumental roles and females for more expressive, nurturant roles (Parsons & Bales, 1955).

The hypothesis was therefore proposed, for this research, that caregivers would direct more personal-social questions to females and more referential-objective questions to males, regardless of the convergent or divergent nature of the questions. In addition to this hypothesis, further research questions were posed:

1. Do caregivers address equally to males and females true questions and non-informational questions regardless of form and content?
2. What is the frequency of true caregiver questions of convergent forms:
    a. Form A (designed to elicit only one correct response).
    b. Form B (requiring a "yes" or no response).
3. What is the frequency of divergent (open-ended Form C and choice Form D) questions in comparison to convergent questions?

4. Is there a significant difference in the proportion of personal-subjective versus referential-objective questions addressed to toddlers?
5. How frequently do teachers ask questions designed to elicit awareness of the feelings of others?
6. Aside from true questions, designed to elicit information, what is the frequency and content of non-information-seeking questions addressed to toddlers?
7. Are there differences in rates of toddler response (compliance)
    a. to true questions (of either convergent or divergent form) or
    b. to non-information-seeking questions?

Method

Subjects

The present study is part of a larger investigation into teacher-child-peer interactions. The larger study involves 100 two- and three-year old boys and girls attending day care centers. Subjects for the present analysis were 24 males and 24 females between the ages of 24 and 30 months. The mean age of the children was 27 months. They are members of low-income families whose day care fees are paid by Title XX funds. The toddlers attend five different day care centers that serve a low-income clientele in a moderate-sized metropolitan area. Selection of subjects across centers minimizes the possibilities that behaviors are idiosyncratic to teacher or child functioning or activity setting in any one particular day-care center.

Observational System

Each child was observed four times for four minutes in each of five typical day care settings (creative, story/song, gross motor, fine motor, and eating) during morning program hours, for a total observed time of 80 minutes per child.

No more than two observations per child were carried out for a particular setting on any given day and no more than five observations per child were recorded on any one day.

The APPROACH (Caldwell & Honig, 1970) system was used to record all ongoing child behaviors in sequence within each setting. Observer reliability on taking APPROACH records ranged from 70-85% for each behavioral category. The five recorders did not know the purpose of the data gathering.

Coding of Questions

Only questions directed to the children individually rather than in group were coded for this study. Questions were initially scored as either true or non-information seeking. All true questions were then coded as either convergent (Form A, requiring one correct answer, or Form B, requiring a yes or no answer) or divergent (Form C, open-ended, or Form D, permitting a choice). Each of the four forms of true questions were further coded according to the content of the questions. The questions dealt either with 1) personal desires and feelings, 2) desires and feelings of others, or 3) referential-objective information about objects or persons. The contents of the non-information seeking questions were coded as requests/commands or negative remarks or positive remarks to the child.

Toddler responses to the teacher questions were coded as either compliant or non-compliant. If the child responded verbally, physically or both, the response was coded as compliant, even though the content of the response was not factually correct. For example, if the teacher pointed to a red sweater and asked "What color is this?" and the toddler attempted a response, "Blue", then the response was coded as compliant. What mattered was that the children responded, gave acknowledgement that a question had been addressed to them. The children's rate of compliance was calculated to true questions as well as to non-information seeking questions. Inter-coder agreement for assignment of questions to each category ranged between 75% to 95%.

Results and Discussion

Question Forms

The distribution of questions that caregivers ask of toddlers is shown in Table 1. Of the 782 questions that caregivers asked of individual toddlers,

Insert Table 1 about here

81.2% were true questions. The remainder were requests (14.8%), reproofs (3.7%) and praise (less than .2%) couched in question form.

Ofthe 635 true questions asked of toddlers, 4/5 were convergent (allowing one correct answer or a yes/no response) and 1/5 were divergent (allowing for more than one correct answer). Of the true questions, those permitting a yes/no answer were most frequently (56%) asked of toddlers, whereas 25% required one correct answer. Only 18% of questions were open-ended questions designed to stimulate restructuring and organizing cognitively. Fewer than 1% of caregiver questions offered toddlers a choice.

Caregivers may need more assistance in learning how to formulate open-ended and choice questions. Blank (1973) found that specific intensive training was necessary for tutors in her enrichment program with 3-year olds to learn to use carefully chosen and sequenced Socratic questions in order to stimulate logical thinking in very young children.

Question Content

Almost 60% of the content of true questions (see Table 2) referred to toddlers'

Insert Table 2 about here

personal wishes, desires and feelings; 40% referred to physical and functional attributes of objects and persons. Less than 1% of teachers' questions referred

to other people's feelings or wishes.

If the rudiments of prosocial behaviors and role-taking skills are considered part of a curriculum for toddlers, then teachers may need training to help them increase the use of such questions. A question such as "How do you think Jennie feels when she has none of the play-dough to play with?" may be supplemented with statements, such as "Look at her eyes. She is crying. She wishes that she had some play-dough too." Follow-up questions could suggest that the toddler think about feelings: "How would you feel if Jennie took all the play-dough and you wanted some to play with too?" Learning how to share and how to consider the needs of others as well as one's self should be an important part of young children's group experiences. Judiciously chosen, teacher questions can stimulate pro-social awareness and understandings.

Sex Differences

Boys and girls received 292 and 343 true questions respectively. The mean differences per child were not statistically significant.

The hypothesis that girls would receive more questions relating to personal-social content than boys was partially confirmed (see Table 2). Males received 134 questions and females 226 questions relating to personal-subjective desires and feelings of self or others. The difference in mean number of such questions per child was significant at $p < .05$. Boys received 158 true questions that were referential and girls received 117. The difference in mean number per child showed a trend toward significance at $p < .08$.

For the convergent questions analyzed separately, differences between the sexes were not significant (Table 1). When all convergent questions were examined (combination of Forms A and B), however, the difference was significant ($p < .01$), in favor of personal-social questions directed to girl toddlers. A significant difference was also found for Form C open-ended questions. Girls were asked significantly more personal-feeling questions than males ($p < .025$).

Girls also received significantly more ($p < .01$) suggestions/commands from teachers than did boys. A possible interpretation is that caregivers may request or command more of that sex that they believe will be most compliant with their requests. Support for this hypothesis comes from Honig & Wittmer's (1981) finding that although 2-year old boys and girls were equally compliant to teacher bids, caregivers reacted to the non-compliance of boys at a significantly higher rate than that of girls. The adults attended more to male non-compliance, perhaps, because they "expected" more of it.

Compliance

Male and female toddlers complied equally (56.92 and 50.63% respectively) to true questions. While compliance to convergent questions was equal for males and females (about 55%), boys complied significantly more frequently to divergent questions than did females (55% to 31% respectively). These data are difficult to interprete since boys and girls received differential numbers of personal (25 to 50) and referential (27 to 13) open-ended questions. Further analysis may be needed to find out whether the contents of the divergent questions complied with by boys differed in any special way from those responded to by girls. With regard to non-information-seeking questions, there was no significant difference between male and female rates of responding.

Conclusions

Question asking is a teacher technique that can be used to promote thinking skills and pro-social behaviors in young children. The present study suggests that in some toddler classrooms these techniques may not be utilized as optimally as possible to further such goals.

Sigel's distancing theory and Piaget's theoretical emphasis on the importance of the equilibration process give cause for concern that the majority of teacher questions analyzed in this study demanded a simple "yes" or "no" response. Caregivers may need specific training in the development of skills in posing divergent

questions that are geared to the toddler's current level of cognitive competence and that offer concrete referents familiar to toddlers in order to facilitate further advances in cognitive understandings and reasoning ability.

In this study, examination of questions asked by toddler teachers revealed some tendencies to promote sex stereotypes by asking more personal-social questions of females compared to males. Caregivers also made more requests of females than of males, who may possible be considered not as likely to comply with teacher requests.

The higher rate at which male toddlers responded to open-ended questions leads one to question whether little girls are being socialized to respond to more routine and safe questions than to questions which require cognitive restructurings and struggles in formulating responses about the objective world.

The microscopic level of analysis of actual caregiver-toddler interchanges in day care centers (in this case focussed on question-asking by adults) has proved to be sensitive assessment tool in revealing the nature of adult-child transactions which can be presumed to promote cognitive and social learnings or to result in more custodial patterns of caregiving not particularly facilitative of child development.

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Table 1

Caregiver Questions to Toddlers: Form and Content

	To Males		To Females	
	M[a]	N[b]	M[a]	N[b]
True Questions				
Form A (has one possible correct answer)	3.50	84	3.21	77
Content refers to:	(3.55)		(2.45)	
1. Personal desires/feelings	0	0	.87	21
	(0)		(1.29)	
2. Feelings of others	0	0	0	0
	(0)		(0)	
3. Name/nature of objects/persons	3.50	84	2.44	56
	(3.55)		(2.48)	
Form B (allows a yes or no answer)	6.42	154	8.33	202
Content refers to:	(5.19)		(5.09)	
1. Personal desires/feelings	4.54	108	6.25	152
	(3.41)		(3.73)	
2. Feelings of others	0	0	.08	2
	(0)		(0)	
3. Name/nature of objects/persons	2.00	46	2.08	48
	(2.22)		(2.31)	
Form C (open-ended questions)	2.36	52	2.36	64
Content refers to:	(2.34)		(1.87)	
1. Personal desires/feelings	1.04	25	2.08*	50
	(1.16)		(1.93)	

Table 1-continued

	To Males		To Females	
	M[a]	N[b]	M[a]	N[b]
2. Feelings of others	0	0	.04	1
	(0)		(0)	
3. Name/nature of objects/persons	1.17	27	.52	13
	(1.70)		(.99)	
Form D (choice questions)		2		0
Content refers to:				
1. Personal desires/feelings	.04	1	0	0
	(0)		(0)	
2. Feelings of others	0	0	0	0
	(0)		(0)	
3. Name/nature of objects/persons	.04	1	0	0
	(0)		(0)	
Total True Questions	12.88	292	14.67	343
	(7.79)		(8.02)	
Non-Information Seeking Questions				
Suggestion/command	1.52	37	3.30***	79
	(1.63)		(2.67)	
Negative command, reproof, criticism	.77	17	.45	12
	(1.38)		(.86)	
Positive emotional content	.08	2	0	0
	(0)		(0)	
Total Non-Information Seeking Questions	2.25	56	3.79**	91
	(1.73)		(2.73)	

Note. Data reported for 24 male and female toddlers

[a] M = mean frequency of questions per child. SDs are reported in parentheses below M.

[b] N = total number of questions of this type addressed by caregivers.

*p < .025 (one tailed t test)

**p < .05 (two tailed t test)

***p < .01 (two tailed t test)

Table 2

Content of Teachers' Questions to Male and Female Toddlers

	To Males		To Females	
	M[a]	N[b]	M[a]	N[b]
1. Personal desires/feelings	6	134	8.54**	223
	(3.6)		(5.26)	
2. Feelings of others	0	0	.13	3
	(0)		(.34)	
3. Name/nature of objects/persons	6.83*	158	5.01	117
	(4.86)		(4.02)	

Note. Data reported for 24 male and 24 female toddlers

[a] M = mean frequency of questions per child. SD's are reported in parentheses below M.

[b] N = total number of questions of this type addressed by caregivers.

*$p < .08$ (one tailed t test)

**$p < .05$ (one tailed t test)